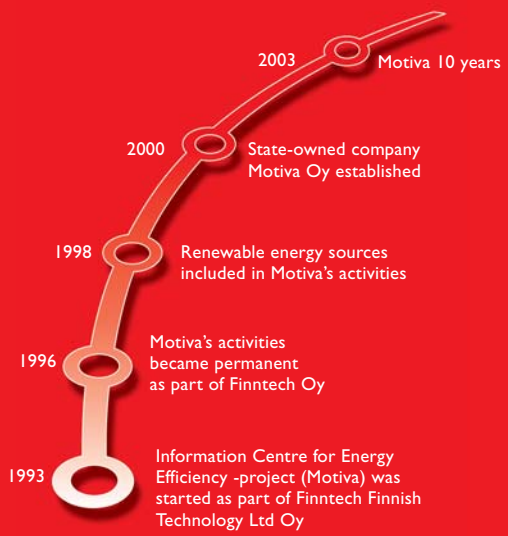
Motiva Oy

Annual Review 2003



Motiva

Content



More information, including the Report of the Board of Directors and the Annual Accounts 2003 at Motiva's English language internet service: *www.motiva.fi/en*

Motiva as business activator and network builder

Motiva celebrated its 10-year jubilee in 2003. It was its third year as a limited company. Motiva Oy is a Finnish state-owned company.

In preparation for a new decade, the organisation developed its operation from the basis of strategic work in an ever more customer-oriented direction. The customer and product groups formed at the beginning of the year serve as a solid foundation for close collaborative partnerships with key customers. Thanks to our new mode of operation, we are ever better able to understand our customer businesses' operational environments.

10-year-old Motiva has consolidated its position

From the start, Motiva has worked to activate businesses in various areas of the energy sector. Our main areas of operation are energy conservation and promotion of renewable energy sources. Motiva's role is to work as builder of networks and initiator of projects, representing the perspective of the end-user and operator. Development of technologies and innovations is carried out in businesses and research institutions.

To mark our jubilee year, we reviewed three different projects with characteristics that admirably reflect Motiva's entire field of operation and represent great energy conservation potential. The evaluated projects are activation of heating entrepreneurship, development of energy auditing to become a Finnish success story, and the Renovation window competition as an example of a successful method of disseminating new technology associated with energy conservation.

The evaluation showed that all the projects have created new business activity.

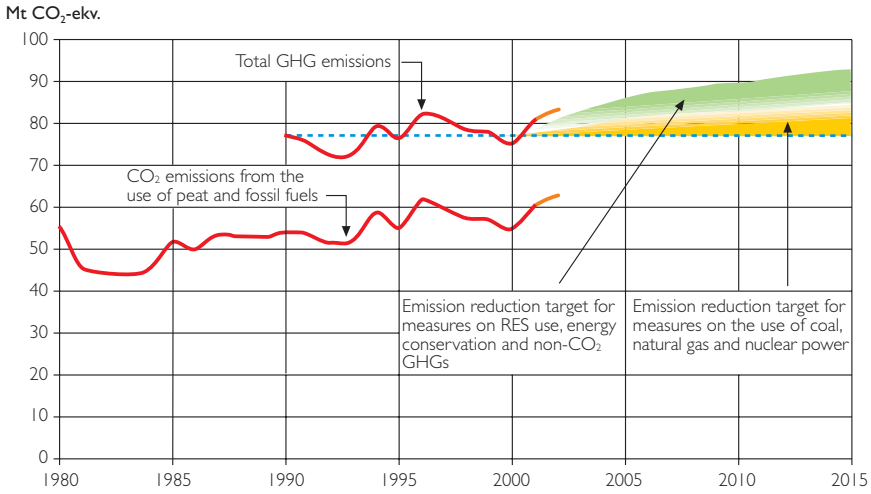
Challenges continue into next decade

Behind Motiva's operation lie international climate agreements, Finland's Climate Strategy, the Action Plan for Renewable Energy Sources and the Energy Conservation Programme.

The aim is that by conserving energy, a quarter of Finland's greenhouse gas reduction target is achieved by 2010, or a quantity equivalent to 3-4 million tons of carbon dioxide. By increasing use of renewable energies, we aim to reach a further similar reduction in greenhouse gas emissions.

Motiva's remit is the dissemination of information about the impact of energy conservation and renewable energy sources to end-users of energy. The Climate Strategy, scheduled for renewal, and continuing efforts to reduce greenhouse gases will define Motiva's policy and activities in the future.

REDUCTION IN CARBON DIOXIDE EMISSIONS IN LINE WITH THE FINLAND'S CLIMATE STRATEGY



Source: National Climate Strategy. Council of State report to the Parliament. VNs 1/2001

Motiva Oy provides expertise and project services to promote more efficient energy use and to accelerate the uptake of renewable energy sources.

- **Operation began in 1993**
- **Limited company from November 1, 2000**
- **Turnover EUR 4 million (2003)**
- **Profit for accounting period EUR 113,533 (2003)**
- **Managing Director Jochim Donner, MA (2003)**
- **Average number of personnel 25 (2003)**

The Finnish capital, Helsinki, joined the municipalities' new energy and climate agreement in December 2003, undertaking to promote use of renewable energy sources as well as energy efficiency.

Energy conservation agreements implement Climate Strategy in practice

Motiva advances implementation of agreements and monitors the results.

Voluntary energy conservation agreements form a part of implementation of the National Climate Strategy and the Energy Conservation Programme, which it is hoped will succeed in reaching a quarter of Finland's greenhouse gas reduction target.

At the end of 2003, eight energy conservation agreements between ministries and business and branch organisations were in force, with a view to more efficient energy use. In addition, there is a currently ongoing energy conservation programme for goods transport vehicles, as well as the *Höylä II* programme involving properties with oil-fired heating.

The parties of energy conservation agreements are the Ministry of Trade and Industry, the Ministry of Transport and Communications, the Ministry of the Environment, and businesses, communities and business and branch organisations.

By the end of 2002, the measures introduced as part of the agreements resulted in a total energy saving of 4.1 terawatt-hours per annum. This is equivalent of the annual electricity and thermal energy consumption of approx. 180,000 single-family houses.

Extensive coverage of energy conservation agreements

The energy consumption of the businesses and communities that have signed up to energy conservation agreements is about 55 percent of total annual energy consumption in Finland.

Industrial conservation agreements cover over 80 percent of energy consumption, and in electricity production as much as 90 percent of total production.

Municipal energy and climate agreements

As a result of the Climate Strategy, renewable energy sources have been included in implementation of the energy conservation agreements. The energy and climate agreement of Finnish municipalities, renewed in 2002, also encompassed use of renewable energy sources – as the first among agreement sectors.

Photo: The City of Helsinki

Projected savings on target

At the start of the energy conservation agreement system, the potential energy savings in the various sectors were calculated to be about 11 terawatt-hours at the end of 2005. Half of this was projected to be achievable by 2010.

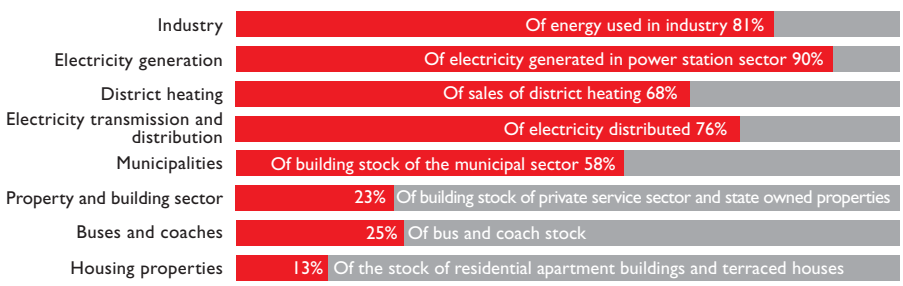
Based on the energy-saving impact of the initiatives implemented by the end of 2002, we believe that the savings targets originally projected will be already exceeded during the current agreement period by the end of 2005. The initiatives implemented to date have reduced carbon dioxide emissions by about a million tons a year.

Evaluation of agreement scheme in 2004

The energy conservation agreements for all sectors other than residential property will come to an end in 2005. Evaluation of activities and achievement of goals of the agreement sectors about to end will be set in motion in 2004. Evaluation results and the emissions trading to be started in 2004 in the EU will determine the continuation and development of energy conservation agreement schemes after 2005.

In the course of 2004, we will assess the needs for reporting and monitoring of energy usage and carbon dioxide emissions of the various agreement sectors, as well as those of the activities promoting energy efficiency. In addition, we will map the situation after termination of the current conservation agreements.

COVERAGE OF ENERGY CONSERVATION AGREEMENTS AT THE END OF 2003



The power plant energy analysis model published by Motiva was applied and tested for the first time in a forest industry power plant, at the Stora Enso pulp and paper mills in Imatra.

Energy audit – first step in improving energy efficiency in a business

Motiva is engaged in developing energy audit activity supported by the Ministry of Trade and Industry, and monitoring its success and quality.

The energy audit is a comprehensive report on the organisation's energy consumption, resulting in formulation of proposals for economically viable action and possible uses for renewable energy forms.

Finnish auditing expertise is renowned in Europe, and Motiva takes an active part in the European cooperative network in the field of energy auditing.

Energy audits and their effective utilisation create the foundation for efficient energy use by businesses and communities. Awareness of the current energy usage situation and pinpointing of economically viable areas for savings are the first steps in improving the efficiency of energy usage.

Energy audits are a fundamental part of energy conservation agreements made by businesses and communities. One of the aims of the agreements is to draw as great a part of energy consumption as possible into the scope of audit and analysis activity. In recent years, conservation agreements have had a significant impact on the growth of audit numbers.

In 2003, energy audits were most actively taken up by industry and businesses in the property and construction sector.

In 2003, a total of EUR 1.5 million, or 88 percent of all audit subsidies, was allocated to support businesses that had signed up to energy conservation agreements. The subsidies increased for projects in industry and energy sectors, whereas subsidies granted in the service sector amounted to only half of those in the previous year.

New audit models

The first version of the audit model for ascertaining potential use of renewable energy in municipalities is nearing completion. The finishing touches to the model will be completed during 2004, and the necessary training schemes will be designed and introduced.

The draft model for energy audits of residential apartment blocks was completed in spring 2003, and it has been

Photo: StoraEnso Oyj

applied in audits carried out in 2003. The EU directive on energy performance of buildings, to be enforced in 2006, will mean that an energy certificate for such buildings is required.

Audits produce information on carbon dioxide emissions

In accordance with the requirements of the National Climate Strategy, energy audits have included an assessment of possible uses of renewable energy forms, as well as energy conservation. Wood energy and heat pump applications have been under particular scrutiny.

The audits, carried out in accordance with the general directions introduced in 2003 by the Ministry of Trade and Industry, also provide information on likely reductions in carbon dioxide emissions gained by implementation of the proposed conservation measures.

The Ministry of Trade and Industry has supported the energy audit activity in the service sector and industrial buildings and production processes since 1992. Energy audits are estimated to produce an annual saving of about EUR 26 million in the energy and water costs of the audited businesses. In energy units, the annual savings amount to more than one terawatt-hour.

ESCO model gaining impetus

The ESCO operational model, where the implementation of energy conservation is commissioned as a complete service from a third party, is becoming better known in Finland. Motiva promotes ESCO activity and creation of projects to exploit it, e.g., by means of dissemination of information.

Information on ESCO projects in other countries is received via the International Energy Agency, IEA, and positive experiences are adopted in Finland.

In order to give added impetus to the operational model, the Ministry of Trade and Industry allocated investment subsidies to ESCO projects in 2003, likening them to model projects of new technology.

Directives affect audits

The impact of EU directives on emissions trading and on energy performance of buildings on audit activity in the various sectors will be assessed in 2004.

CUMULATIVE ENERGY AUDIT SUBSIDIES FROM THE MINISTRY OF TRADE AND INDUSTRY AND ENERGY AUDIT COSTS IN 1992–2003

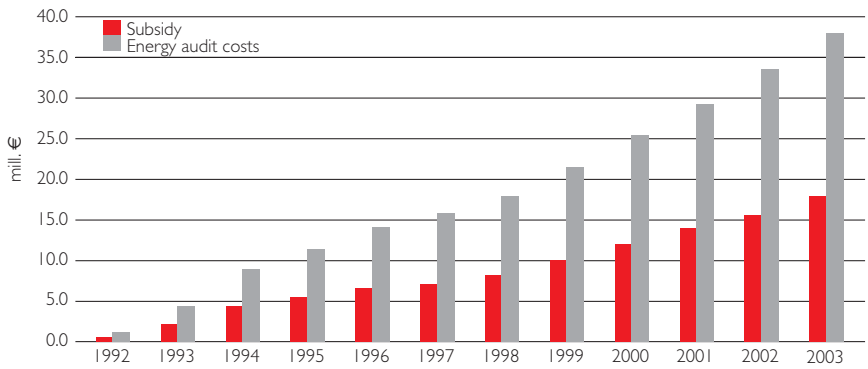


Photo: Jyrki Heinonen

The EU has adopted the energy efficiency classification system of cage induction motors, whereby the motors are classified in three groups according to the efficiencies.

Technology enables permanent change

Motiva initiates and coordinates projects to promote uptake of energy-efficient technology in the marketplace.

Development and adoption of energy-efficient technology plays a significant role in controlling greenhouse gas emissions. Technological solutions bring about long-term, permanent changes, but the decisive factor is uptake of the new technology and its success in the marketplace.

Many of the projects are implemented through international collaboration, an example of which is GreenLight, the European programme of energy-efficient lighting. Important tools in acceleration of market change are, e.g., procurement competitions, societal embedding, and networking of players.

Target: market change

The most energy-efficient technology consumes less than half, sometimes even less, than customary technology. Energy classifications and labels, consumption and efficiency values and other criteria facilitate decision-making and direct the choices of consumers and businesses. Market change ensures that new technology moves in the direction of better energy efficiency, as the old technology that uses more energy gives way in the marketplace.

Energy labelling breakthrough

Improvements in energy efficiency of household cold storage equipment have been advanced by the pan-European Energy+ project. As a result, the more efficient A+ and A++ have been added to the head of Energy Class A. Their electricity consumption is at least 25 and up to 40 percent lower than an equivalent class A appliance. These labellings become mandatory at the end of 2004.

Energy labelling has been successfully used to increase awareness and market share of energy-efficient household appliances.

New energy labellings

In 2003, EU energy labelling became mandatory in electric ovens, in addition to those previously required in domestic refrigeration appliances, washing machines, tumble dryers, dishwashers and light fittings.

In businesses, too, energy labels determine buying decisions on electrical equipment. This was found in a study of people responsible for business purchases. The majority was influenced in their decision by the energy consumption and environmental qualities of the goods.

Future focal points

Our aim is to accelerate uptake of technologies that are energy-efficient and exploit renewable energy sources, by developing methods and guidelines that may be used to indicate recommended techniques. One of our focal areas is increasing consideration of energy efficiency in public procurement.

Societal embedding of technology will be applied both in industry and in the service and consumer sectors. We are preparing for the introduction of an energy efficiency rating system for windows in 2005.

The Valamo Orthodox Monastery at Heinävesi in eastern Finland is heated by wood pellets.

Many possibilities for renewable energy use

Motiva works to promote use of renewable energy sources and is involved in developing new operational models and services for their utilisation.

The National Climate Strategy has set the target of reducing greenhouse gas emissions by a quarter by increasing renewable energy use. The target increases are set out in the Action Plan for Renewable Energy Sources for 2003-2006. The target for renewable energy use by 2010 is a 30 percent increase compared to 2001. This means that the growth required in production capacity of renewable energy sources is 1,500 megawatts.

The renewable energy sources account for 22 percent of Finland's total energy consumption in 2003.

Apart from reducing greenhouse gas emissions, there are also other strong grounds for utilisation of renewable energy, e.g., maintaining the high level of Finnish energy technology, security of energy supply, increasing new enterprise and employment. In the case of bioenergy in particular, promotion of business activity and development and adoption of new technologies take centre stage.

Bioenergy number one renewable energy in Finland

The majority of renewable energy today is produced from wood-based energy sources. The greatest increase of production potential is also estimated to be in bioenergy, and proportionately the most important targets have been set for the use of forest chips.

The wood energy technology programme, ended at the close of 2003, focused on developing the whole wood fuel supply chain from the forest to the boiler. The programme results show that the target of 5 million cubic metres of forest chip consumption by 2010 is achievable, but there is still much development work to be done. Small-scale production of wood fuels and development of their utilisation will remain on the agenda until the end of 2004.

New operational models of bioenergy entrepreneurship were created in a project initiated by Motiva, which was executed in partnership by several players in the sector. The development project is used to promote entrepreneur-led bioenergy business and to increase entrepreneur know-how in the branch.

Power from wind, heat from the sun and the earth

Finland has developed an internationally competitive wind power technology that has opened up brand new export opportunities for businesses. In 2003, Finland had approx. 70 wind power plants producing electricity, with a total output of 50 megawatts. Several new wind power plant projects are under way.

In Finnish single-family houses, wood is still an important thermal energy source, along with oil. However, solar heating has increased considerably in popularity. More than 200 solar-oil heating system installers and designers were trained in 2003.

Almost a fifth of new single-family houses in Finland use ground source heat pumps for heating. The modern, efficient heat pumps are also suitable for large buildings.

Photo: PhotoDisc

The European Energy Network (EnR) is the network of official energy organisations in the EU countries. Motiva presides the EnR network in 2004.

Networks and communication exploited effectively

Motiva works to create functional networks for businesses and communities, to coordinate and develop their operation, and to act as information provider.

Improving energy usage and promotion of renewable energy sources are carried out in collaboration with several players. By networking, available resources may be multiplied and the best available expertise exploited. Through networks, knowledge and good operational models are most effectively disseminated.

Number of heating entrepreneurs on the increase

During 2003, about 40 new heating businesses were started up. The total number of heating businesses is about 200, and their combined output is approx. 100 megawatts.

Heating entrepreneurship has increased the use of wood energy by 250,000 loose cubic metres per annum, as the most commonly used fuel at these plants is forest chips. This quantity means an annual reduction of up to 60,000 tons in carbon dioxide emissions.

Energy agencies raise their profile

Seven Finnish energy agencies have participated in a networking project financed by the Ministry of Trade and Industry and coordinated by Motiva. The project has raised the agencies' profile and emphasised their expertise. Finnish energy agencies also take an active part in the ManagEnergy partnership project of European energy agencies.

Energy Awareness Week activates businesses and communities

The National Energy Awareness Week is an annual theme week held in Finland every October, when businesses and communities organise events to intensify energy conservation.

In 2003, the Energy Awareness Week activated almost 140 businesses and communities. The Week reached about 17,000 employees of participating businesses and 8,000 customers. Motiva's role was that of initiator and activator of collaboration on the Week.

The Car-Free Day and the Mobility Week

The Car-Free Day was held in Finland for the fourth time in 2003. The day has become familiar and it was observed in 19 communities. It forms a part of the international environmental campaign that reaches more than 80 million people.

The Car-Free Day was preceded by the Mobility Week, held in Finland for the first time.

Collaboration at EU level

Motiva is the contact point of Finnish participants in the new European Commission Intelligent Energy – Europe (EIE) programme. It focuses on energy efficiency and renewable energy sources. The programme will run until 2006.

In 2003, the European Commission launched a three-year CO-OPET project as a tool for strategic planning, development of networking and exchange of information within the OPET network (Organisations for the Promotion of Energy Technologies). Motiva is active in the steering group of the CO-OPET project.

Motiva takes an active part in the partnership projects of building the OPET network and of improving the energy performance of transport and industry.

Publications in English available in Motiva

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Motiva Oy Annual Report 2002

Energy Agencies, Controlled and proficient energy production and use

ABB Motors – Winners in the IEA Hi-Motors Competition

Low temperature heating systems – Increased energy efficiency and improved comfort, IEA Annex 37, LowEx-brochure

Hey, everything's working! -children's energy book

Travel in Finland virtually! -multimedia game on transport at *www.motiva.fi/matkallasuomessa* (English)

The Climate Change Communications Programme

Energy Audit Case Cards:

- Primary Schools 5/00
- Biotechnology 1/02
- Power Plants 4/01
- Sports Halls 1/01
- Industrial Power Plants 2/04

OPET Finland

Renewable Energy Sources in Finland 2002, OPET report 9

Turku Energia – Promising results of co-firing of pellets with coal, fact sheet

More OPET information products at *www.tekes.fi/opet/eaenglish.htm*

Climtech Programme

Climtech result brochures:

Fluorinated Greenhouse gases 1/2002

Wind power in Finland 2/2002

Solar Road Map Solar Energy for Finland 3/2002

Distributed energy production 4/2002

Utilisation and energy use of waste 5/2002

Bioenergy potential 6/2002

Modern technology for homes and offices 7/2002

Energy service companies 8/2002

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Carbon dioxide emissions from transport can be reduced 10/2002

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An interactive learning process 14/2002

The operation of the forest cluster 15/2002

Recs, renewable energy certificate system 16/2002

Mechanical pulp production 17/2002

Hydrogen as an energy carrier 18/2002

Wood products as a carbon sink 19/2002

Energy system models 20/2002

More information at *www.climtech.vtt.fi*

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